

Practitioner's Dock t No. TRW(TE)4170

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Roger A. McEurdy

Application No.: 09/494,954

Group No.: 3611

Filed: February 1, 2000

Examiner: L. Lum

For: **METHOD AND APPARATUS FOR CONTROLLING AN ACTUATABLE  
OCCUPANT PROTECTION DEVICE USING AN ULTRASONIC SENSOR****RESPONSE UNDER  
37 C.F.R. § 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP****BOX AF**Assistant Commissioner for Patents  
Washington, D.C. 20231

**NOTE:** To take advantage of the expedited procedure the envelope in which this paper is mailed must be addressed as shown and must also be marked "Box AF" in the lower left hand corner. Alternatively, this paper can be hand carried to the particular Examining Group or other area of the Office in which the application is pending, in which case any envelope in which this paper is placed must be marked as in the bold type box above. Notice of Sept. 20, 1985 (1059 O.G. 19-20). See M.P.E.P. § 714.13, 6th ed., rev. 3.

**AMENDMENT OR RESPONSE AFTER FINAL REJECTION--TRANSMITTAL**

1. Transmitted herewith is an amendment after final rejection (37 C.F.R. § 1.116) for this application.

**CERTIFICATE OF MAILING/TRANSMISSION 37 CFR 1.8(a) and 1.10\***  
(When using Express Mail, the Express Mail label number is mandatory;  
Express Mail Certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

**MAILING**

- ☐ deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.  
37 C.F.R. § 1.8(a)
- ☐ with sufficient postage as first class mail. ☐ as "Express Mail Post Office to Addressee" 37 C.F.R. § 1.10\*  
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**TRANSMISSION**

- ☒ transmitted by facsimile to the Patent and Trademark Office.

  
SignatureDate: November 8, 2001Anita J. Galo  
(type or print name of person certifying)

**\*WARNING:** Each paper or fee filed by Express Mail must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

**NOTE:** *Response to Final Rejection—Avoiding Extension Fees* "In patent applications wherein a three month Shortened Statutory Period (SSP) is set for response to a Final Rejection, the response would best be filed within two months of the date of the Office Action. If filed within two months, any Advisory Action mailed after the SSP expires will reset the SSP to expire on the date of the Advisory Action for extension fee purposes, but never more than six months from the date of the Final Rejection." Notice of Nov. 30, 1990 (1122 O.G. 571 to 591). See M.P.E.P. § 714.13, 6th ed., rev. 3.

### STATUS

**2. Applicant is**

- ☐ a small entity. A statement:
- ☐ is attached.
- ☐ was already filed.
- ☒ other than a small entity.

### EXTENSION OF TERM

**NOTE:** *As to a Supplemental Amendment filed in response to a final office action, the Notice of December 10, 1985 (1061 O.G. 34-35) states:*

*"If a timely response has been filed after a Final Office Action, an extension of time is required to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run."*

**3.**

*(complete (a) or (b), as applicable)*

- (a) ☒ Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(1)-(4) for the total number of months check below:

Extension (months)	Fee for other than <u>small entity</u>	Fee for <u>small entity</u>
<input checked="" type="checkbox"/> one month	\$ 110.00	\$ 55.00
<input type="checkbox"/> two months	\$ 400.00	\$200.00
<input type="checkbox"/> three months	\$ 920.00	\$460.00
<input type="checkbox"/> four months	1,440.00	\$720.00

Fee \$ 110.00

If an additional extension of time is required, please consider this a petition therefor.

*(check and complete the next time, if applicable)*

- ☐ An extension for \_\_\_\_\_ months has already been secured and the fee paid therefor of \$\_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ 110.00

**OR**

- (b) ☐ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

**FEE FOR CLAIMS**

4. The fee for claims (37 C.F.R. § 1.16(b)-d)) has been calculated as shown below:

(Col. 1)	(Col. 2)	(Col. 3)	SMALL ENTITY			OTHER THAN A SMALL ENTITY		
CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDIT. FEE.	OR	RATE	ADDIT. FEE	
TOTAL *22	MINUS ** 22	=0	X\$ 9=	\$		X\$ 18=	\$0.00	
INDEP. * 5	MINUS *** 5	=0	X\$ 42=	\$		X\$ 84=	\$0.00	
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEP. CLAIM		=0	X\$140=	\$		X\$280=	\$0.00	
TOTAL					OR	TOTAL		
ADDIT. FEE				\$		ADDIT. FEE	\$0.00	

- \* If the entry in Col. 1 is less than entry in Col. 2, write "0" in Col. 3.
  - \*\* If the "Highest No. Previously Paid For" IN THIS SPACE is less than 20, enter "20".
  - \*\*\* If the "Highest No. Previously Paid For" IN THIS SPACE is less than 3, enter "3".
- The "Highest No. Previously Paid For" (Total or Indep.) is the highest number found in the appropriate box in Col. 1 of a prior amendment or the number of claims originally filed.

**WARNING** See 37 C.F.R. § 1.116.

(complete (c) or (d), as applicable)

- (c) ☒ No additional fee for claims is required.

OR

- (d) ☐ Total additional fee for claims required \$ \_\_\_\_\_

**FEE PAYMENT**

5. ☐ Attached is a check in the sum of \$ \_\_\_\_\_
- ☒ Charge Account No. 20-0090 the sum of \$110.00

A duplicate of this transmittal is attached.

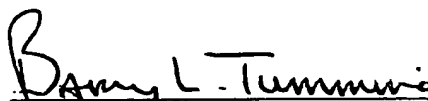
**FEE DEFICIENCY**

**NOTE:** *If there is a fee deficiency and there is no authorization to charge an account, additional fees are Necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986 (1065 O.G. 31-33).*

6. ☒ If any additional extension and/or fee is required, charge Account No. 20-0090.

**AND/OR**

- ☒ If any additional fee for claims is required, charge Account No. 20-0090.

  
SIGNATURE OF ATTORNEY

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Practitioner's Docket No. TRW(TE)4170**PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Roger A. McCurdy

Application No.: 09/494,954

Group No.: 3611

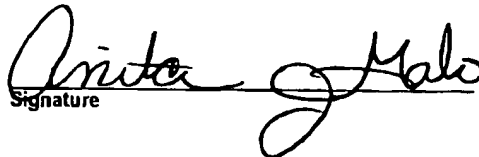
Filed: February 1, 2000

Examiner: L. Lum

For: **METHOD AND APPARATUS FOR CONTROLLING AN ACTUATABLE  
OCCUPANT PROTECTION DEVICE USING AN ULTRASONIC SENSOR**Assistant Commissioner for Patents  
Washington, D.C. 20231**FACSIMILE TRANSMISSION CERTIFICATE**Date of Deposit November 8, 2001

I hereby certify that the following *attached* papers and/or fee are being deposited VIA FACSIMILE on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231:

1. Amendment or Response After Final Rejection - Transmittal (4 pgs. in duplicate); and
2. A Response After Final (10 pgs.).

November 8, 2001  
DateAnita J. Galo  
(type or print name of person signing certification)  
Signature

**PATENT**

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING  
FACSIMILE TRANSMITTED TO: ASSISTANT COMMISSIONER FOR  
PATENTS, WASHINGTON, D.C. 20231, ON

November 8, 2001

Amita J. Hala  
SIGNATURE

11/08/2001  
DATE

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Roger A. McCurdy  
Serial No. : 09/494,954  
Filing Date : February 1, 2000  
For : METHOD AND APPARATUS FOR  
CONTROLLING AN ACTUATABLE  
OCCUPANT PROTECTION DEVICE  
USING AN ULTRASONIC SENSOR  
Group Art Unit : 3611  
Examiner : L. Lum  
Attorney Docket No. : TRW(TE) 4170

**BOX AF**

Assistant Commissioner for Patents  
Washington, D.C. 20231

**RESPONSE AFTER FINAL**

Sir:

This is a response to the Office Action dated July 9, 2001. In view of the remarks that follow, reconsideration of the above-referenced application is respectfully requested.

The Office Action of July 9, 2001 rejected claims 1-5, 8-10, 12-15, 17-19, and 22 under 35 U.S.C. §102(b) as being anticipated by Breed, U.S. Patent No. 5,684,701 (hereinafter "Breed"). The Office Action also rejected claims 6, 7, 11, 16, 20, and 21 under 35 U.S.C. §103(a) as being obvious over Breed in view of Thompson et al., U.S. Patent No. 6,020,812 (hereinafter "Thompson et al.").

Serial No. 09/494,954

This rejection of the claims is respectfully traversed. Anticipation requires a single prior art reference that discloses each element of the claim. W.L. Gore & Associates v. Garlock, Inc., 220 UPSQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Additionally, the single prior art reference must disclose each and every element of the claimed invention. Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984).

"There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." Scripps Clinic & Research Foundation v. Genentech Inc., 18 USPQ2d 1001, 1010 (Fed. Cir. 1991).

Claim 1 recites a system for helping to protect a vehicle occupant. The system comprises a crash sensor operative to sense a vehicle crash event and to provide a crash signal having a characteristic indicative of the sensed crash event. The system also comprises an acoustic safing sensor that is operative to sense acoustic waves propagating through the vehicle structure during a vehicle crash event and to provide a safing signal having a characteristic indicative of the sensed crash event. The system further comprises an actuatable occupant protection device and a controller that controls actuation of the occupant protection device in response to both the crash signal and the safing signal indicating the occurrence of a crash event.

Breed fails to disclose each and every element of claim 1. Firstly, Breed fails to disclose an acoustic safing

Serial No. 09/494,954

sensor that is operative to sense acoustic waves propagating through the vehicle structure during a vehicle crash event and to provide a safing signal having a characteristic indicative of the sensed crash event. In rejecting claim 1, the Office Action states that ultrasonic sensors 311-314 of Breed indicate the "real-time position of the occupant during the...crash." The Office Action further states that the real-time position of the occupant during the crash is a characteristic indicative of the crash event because the type and velocity of the crash event determine the occupant's motion towards or away from the sensors 311-314.

The statement in the Office Action that the real-time position of the occupant during the crash is a characteristic indicative of the crash event lacks support in Breed. The Examiner is implying that Breed teaches deploying an air bag based upon a change in position of an occupant during a crash event. Breed does not teach measuring a change in position of the occupant but only teaches determining the occupant position, or distance relative to the sensors 311-314, of the occupant. (Breed, Col. 9, lines 26-30). Breed uses the position of the occupant to decide whether an air bag should be deployed. If the occupant is too close to the air bag, the air bag will not be deployed. (Breed, Col. 14, line 61 to Col. 15, line 20). Breed recognizes that the position of the occupant relative to sensors 311-314 may vary independently of a crash event. (Breed, Col. 8, line 54 to Col. 9, line 41). For example, assuming the driver of the vehicle is leaning forward immediately prior to the crash event, the position of



Serial No. 09/494,954

the driver at the time of the crash event will not be a characteristic indicative of the crash event. The Examiner's logic in rejecting claim 1 fails to consider the occupant's ability to freely move within the vehicle. Additionally, the Examiner's logic fails to consider whether or not any other vehicle safety restraints are affecting the position of the occupant. For example, an occupant that is restrained by a safety belt will likely move differently relative to sensors 311-314 than an occupant that is not restrained by a safety belt. Moreover, when a pretensioner is actuated in response to the crash event, the passenger may move in a direction, or to a position, that is opposite than expected given the crash condition. Thus, the real-time position of the occupant in the Breed system is not a characteristic that is indicative of the crash condition.

Breed also fails to disclose that the ultrasonic sensors 311-314 are operative to sense acoustic waves propagating through the vehicle structure during the crash event, as is recited by claim 1. Sensors 311-314 of Breed measure a distance to the vehicle occupant by monitoring ultrasonic waves that travel from the respective sensor 311-314 through the air within the vehicle passenger compartment to the occupant and then are reflected back to the sensors 311-314. Breed fails to disclose that the ultrasonic sensors 311-314 sense acoustic waves propagating through the vehicle structure during the crash event. Propagate means to move through a medium. The medium defined in claim 1 is the vehicle structure. Breed fails to disclose the ultrasonic

Serial No. 09/494,954

sensors sensing waves that propagate through the structure of the vehicle. The air within the passenger compartment of the vehicle is not vehicle structure. Additionally, Breed does not support a broad statement that the ultrasonic sensors 311-314 must receive some signals that propagate through the vehicle structure. Breed only teaches or suggests that the ultrasonic sensors 311-314 sense the position of the occupant. Thus, the ultrasonic sensors 311-314 of Breed will not sense any signals other than those indicative of the occupant's position.

Furthermore, Breed fails to disclose a controller that controls actuation of the occupant protection device in response to both the crash signal and the safing signal (from the acoustic sensor) indicating the occurrence of a crash event. (emphasis added) As stated above, the ultrasonic sensors 311-314 of Breed fail to indicate the occurrence of a crash event. The distance of the occupant relative to sensors 311-314 may vary independently of the crash event. Additionally, Breed's controller does not control actuation in response to both a signal from a crash sensor and the signal from the ultrasonic signal indicating the occurrence of a crash event. Even assuming, for the sake of argument, that ultrasonic sensors 311-314 will indicated a crash event, Breed teaches to not actuate an air bag if sensors 311-314 of Breed indicate that the occupant is too close to the air bag module. Thus, the controller of Breed does not control actuation of an occupant protection device in response to both the crash signal and the safing signal indicating the occurrence of a

Serial No. 09/494,954

crash event. Therefore, it is clear that Breed does not anticipate the invention recited in claim 1.

Claims 2-9 depend from claim 1 and are not anticipated by Breed for at least the same reasons as set forth with regard to claim 1.

With regard to claim 10, Breed fails to disclose an acoustic safing sensor operative to sense acoustic waves propagating through the vehicle structure during a crash event and to provide a safing signal having a characteristic indicative of the sensed crash event. As stated above with regard to claim 1, Breed fails to disclose that the ultrasonic sensors 311-314 sense acoustic waves propagating through the vehicle structure. Additionally, the signal provided by the ultrasonic sensors 311-314 of Breed does not have a characteristic indicative of the sensed crash event. As stated above, the position of the occupant of the vehicle in the Breed system is not indicative of the crash event.

Breed also fails to disclose a controller that controls actuation of the occupant protection device in response to the sensor signal from any one of a plurality of crash event sensors and the safing signal from the acoustic safing sensor. (emphasis added) The controller of Breed does not control actuation of the air bag in response to a signal from accelerometer 122 and a signal from sensors 311-314. Therefore, Breed clearly does not anticipate the invention recited in claim 10.

Serial No. 09/494,954

Claims 11-13 depend from claim 10 and are not anticipated by Breed for at least the same reasons as set forth with regard to claim 10.

Claim 14 recites a sensor module for mounting in a vehicle. The module includes an accelerometer that provides an acceleration signal having a characteristic indicative of the sensed vehicle acceleration and an acoustic sensor that detects acoustic waves propagating through the vehicle structure during a vehicle crash event and provides a safing signal having a characteristic indicative of the sensed crash event. Breed fails to disclose a sensor module having both an accelerometer and an acoustic sensor as recited. Breed teaches an accelerometer located in a sensor diagnostic module 120. (Breed, Col. 4, lines 60-66). However, Breed fails to disclose an acoustic sensor being part of the sensor diagnostic module 120. With reference to Figs. 1 and 3 of Breed, the ultrasonic sensors 311-314 are not located in the sensor diagnostic module 120.

Additionally, for at least similar reasons stated above with regard to claim 1, Breed fails to disclose an acoustic sensor or a controller that meet the limitations of claim 14. Therefore, Breed does not anticipate the invention recited in claim 14.

Claims 15-16 depend from claim 14 and are not anticipated by Breed for at least the same reasons set forth with regard to claim 14.

Claim 17 recites a method for controlling actuation of an actuatable occupant protection device of a vehicle. According

Serial No. 09/494,954

to the method, acoustic waves that travel through the vehicle structure during the occurrence of a vehicle crash condition are sensed. In response to the sensed acoustic waves, a safing signal is provided. The occurrence of a vehicle crash event is determined in response to both a crash event signal and the safing signal indicating the occurrence of a vehicle crash condition. Breed fails to disclose each of these steps.

~~Firstly, Breed fails to teach sensing acoustic waves that~~ travel through the vehicle structure during the occurrence of a crash event. The ultrasonic sensors 311-314 of Breed do not sense the acoustic waves traveling through the vehicle structure during the crash event. The sensors 311-314 sense ultrasonic waves sent through air into the passenger compartment to measure a distance to a vehicle occupant. (Breed, Col. 9, lines 21-41).

Secondly, Breed fails to provide a safing signal in response to the sensed acoustic waves. In the Background of the Invention, Applicant defines a safing signal as a signal from a sensor that, when arranged in a voting scheme with another sensor, must agree with the other sensor that a deployment crash event is occurring before restraint actuation is initiated. The ultrasonic sensors 311-314 of Breed output a signal indicating a position of the occupant and not a safing signal to agree or disagree with a crash event signal. (Breed, Col. 9, lines 21-41).

Furthermore, Breed fails to disclose determining a vehicle crash event in response to both the crash event signal and the safing signal indicating the occurrence of a vehicle

Serial No. 09/494,954

crash condition. This step is the "agree" step of the voting scheme. When both the crash event signal and the safing signal indicate the occurrence of a vehicle crash condition, then a vehicle crash condition is determined. Since Breed fails to disclose providing a safing signal that indicates the occurrence of a vehicle crash condition, Breed also fails to meet this element of claim 17. Therefore, it is clear that ~~Breed does not anticipate the invention recited in claim 17.~~

Claims 18-21 depend from claim 17 and are not anticipated by Breed for at least the same reasons as set forth with regard to claim 17.

Claim 22 recites a system for helping to protect a vehicle occupant. The system comprises means for sensing acoustic waves that travel through the vehicle structure in response to the occurrence of the vehicle crash condition and provides a safing signal having a characteristic indicative of a vehicle crash event. The system further comprises control means for determining the occurrence of a vehicle crash event in response to both a crash event signal from a means for sensing a vehicle crash condition and the safing signal indicating the occurrence of a crash event. For reasons similar to those already emphasized above, Breed fails to anticipate each and every element of claim 22. Thus, claim 22 is patentable over Breed.

With regard to claims 6, 7, 11, 16, 20, and 21, the Office Action combines Thompson with Breed citing Thompson as teaching use of crush sensors. For reasons stated above regarding the failure of Breed to anticipate the inventions

Serial No. 09/494,954

recited in the parent claims, the combination of Thompson with Breed does not make up for this failure. Therefore, claims 6, 7, 11, 16, 20, and 21 are patentable for at least the same reasons their associated parent claims are allowable.

The Office Action, without making a rejection, states that the following U.S. Patents disclose all recited elements: Blackburn et al. 6,018,693, No. 5,904,368, Mazur et al.

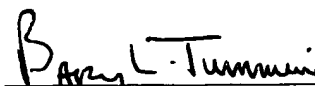
~~No. 5,906,393, Wallace et al. No. 5,964,815, and Musiol et al.~~

No. 5,900,677. This statement is not specific and, therefore, makes it impossible to make a response other than to state that claims 1-22 patentably define over these references whether taken singularly or in combination.

In view of the foregoing, it is respectfully submitted that the present rejection is improper and should be withdrawn. It is further submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,



Barry L. Tummino  
Reg. No. 29,709

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